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A NEW VIEW OF THE THEORY OF WAGES.

I.

LIKE many familiar words whose meanings seem perfectly clear and simple, the word "wages" has different significations, which are liable to be confused. It sometimes means the earnings of labor,—the remuneration, that is, which the laborer obtains as the result of his labor, and which is measured in the various commodities entering into his consumption. Again, it sometimes means the cost of labor to the employer,—that is to say, the price which he pays for labor in money as the representative of general value, money being the standard in which he estimates wages in common with his other expenditures and with his receipts. These two meanings of the word "wages" correspond to two different aspects of labor; for, in considering labor, we may attend principally either to the sacrifices involved in it or to the useful services which it renders. The laborer, in anticipation of the recompense to be received, submits to the sacrifice and undergoes the irksomeness implied in the word "labor." But the sacrifice and irksomeness of labor would secure it no market, and would be utterly insufficient to endow it with exchange value. On the other hand, the services of labor in affording direct gratifications or in producing useful commodities alone procure a sale for it; and these services are weighed by the purchaser in the same scale with the utility of material commodities or of the services which such commodities render.

By far the more interesting of the two aspects of the wages question is the problem of the laborer's remuneration, for that determines the welfare of the greater part of mankind. To this, the merely commercial question of

the price of labor is really subordinate. For the inquiries of political economy have for their ultimate object the gratification of human wants; and questions as to the mechanism by which this is attained are in reality merely subsidiary thereto.

For this reason, there is a natural eagerness to solve at once the question of remuneration by making it the direct object of inquiry. But, if we would attain any valuable and trustworthy results, we must not expect to reach our conclusions at a jump, but must travel cautiously step by step along the path of cause and effect, inquiring carefully as we go into the reasons why labor is bought and sold and into the conditions which must be fulfilled in order that its price may be in equilibrium. It is clear that the price can only be in equilibrium when the supply and the demand are equal, and that the rate of wages must be such as to make them equal. To inquire how wages do this—to examine, that is, more closely into the mechanism whereby the equation of supply and demand is realized—is the object of the present paper. And this is the only natural and right way to proceed in inquiring into the law of the price or value of anything whatever. If some writers have neglected or abandoned it in the case of labor, they have probably done so because they have been unable to see how it issued in any solution of the question. Should we succeed in finding a solution in this way, it is not likely that any one will cavil at the method we pursue.

If, after investigating the influence of price, we should find how supply and demand are made equal, it would then be in place to inquire more particularly into the other factors which join to constitute the supply and demand; but to do so would probably exceed the limits of a single paper.

There are but two ways in which the supply and the demand of anything can be made equal: one is by the

action of price upon supply, the other is by the action of price upon demand. Now, the supply of labor is in the main a question of population; and the influence of the price of labor upon the population only takes full effect after a long series of years,—not less, indeed, than an entire generation. Its laws have therefore usually been treated by economists in connection with the principle of population. But if moderate periods of time only are under consideration, the influence of price upon supply being so long delayed, and being also for that very reason deeply interwoven with other causes, we may disregard its effect. It is under this condition that economists have generally sought to lay down the law of wages; and in this course we shall follow them. The law thus sought is the law of what Ricardo called market wages as distinguished from natural wages, by which latter term he meant that remuneration which would just suffice, on his theory, to induce laborers to maintain population at its actual amount. Supply being treated as stationary, it follows that the equality of supply and demand, which is the condition of the equilibrium of price, can only be reached by the influence of price upon demand.

The condition of the problem as laid down above clearly indicates in what meanings we should use the words “labor” and “wages.” We must use them in those meanings in which they influence the demand for labor. By the word “labor” we shall therefore mean the services which the laborer renders, because, as we have already seen, these alone give rise to a demand for labor. By the word “wages” we shall mean money wages, money being the commodity in which the employer compares the cost of wages with the cost of other things.

The problem of wages therefore, as I present it, is merely the problem of the price of labor.* But, when this prob-

* For the sake of clearness, I shall commonly use the expression “price of labor” instead of “wages.” In so doing, I of course ignore the influence of

lem is solved, it will be an easy step to apply our conclusions to the solution of the intrinsically more important and interesting problem of the laborer's remuneration; for this latter is the resultant of the price of labor and of the price of those commodities which the laborer consumes, assuming always that the quality of labor is the same.

II.

Wages, or the price of labor, will be in equilibrium when the demand just equals the existing supply; and this will occur when it pays employers to hire the whole number of laborers who are seeking employment, and no more and no less.

People wish to hire or buy the services of labor for the very same reason that they wish to buy anything else,—simply because these services afford an immediate gratification or aid in producing material objects which do so. In other words, the hiring of labor, like the purchase of any commodity, is either for the purposes of productive industry or of unproductive expenditure.

In productive industry, every form of investment is open to the employer. He may lay out capital on buildings or machinery. He may expend it in improvements of the soil or in the purchase of beasts of burden or of other animals. He may keep little or much of it locked up in the form of materials or of money. All these things are embraced in what may be called auxiliary capital. On the other hand, the employer may use his capital to buy labor, either slave or free, according to the institutions and laws of the particular country. In all cases, he is governed by one and the same motive,—namely, the desire for gain; and, according to his expectations as to the comparative profit to be reaped, he turns capital into

changes in the value of money, as I may safely do in the limits set for this discussion, trusting to the reader's intelligence to make the necessary correction in any application he may make of my results.

one field or into another. He does not buy labor until he has compared the profit to be got by so doing with that obtainable by a different outlay. Upon his decision depends the demand for labor. If labor commands a high price, he economizes in its use and employs more auxiliary capital. If its price falls, he gradually increases his use of it and curtails his other expenditures. At every rise in price, some of its uses are abandoned and demand shrinks. Every fall in the price enlarges the field of employment and stimulates the demand.

What is here stated of labor is equally true of everything else; and not only is it true of each particular commodity, it is true also of auxiliary capital as a whole. The use of any tool increases as its cost declines, and *vice versa*; and in the same way the general use of auxiliary capital increases relatively to the use of labor, as the rate of interest or price of using capital falls. Where the interest on a given amount of capital is less than the price of such labor as would do the same work, auxiliary capital is used. Where the price of labor is less than such interest, labor is used. If a man can be hired to do a certain piece of work for one hundred and ten dollars, and if when interest is at six per cent. a machine can be hired for one hundred and twenty dollars that will do the same work, then, so long as the rate of interest remains at six per cent., labor will be employed; but if interest falls to five per cent., and the hire of the machine falls in consequence to one hundred dollars, then the machine will be employed. The dividing line between the use of capital and the use of labor varies with the rate of interest and with the price of labor; and in those intermediate cases which are close to this line, and in which advantage wavers between labor and capital without clearly deciding itself for either, the wages of such amount of labor and the interest of such amount of capital as are just able to do the same work or to supplant the one the other are equal,

and the prices paid in such cases for interest and for labor determine the prices paid for them in all their employments.*

The choice of the employer between using labor and using auxiliary capital to produce any given result depends upon their relative costs; and upon his choice depends the demand for each. Demand will only be at rest when it is impossible for the employer to change advantageously the allotment of his capital, between the use of labor and that of tools or beasts, instruments or materials, buildings or any of the manifold forms in which capital assists or supplements, saves or supplants labor.

Under the system of slavery,—slaves being capital just the same as beasts are,—it is clear that the employer must receive an equal return for the use of an equal amount of capital, whether in slaves or in horses, in ploughs or in lands. But the price of free labor is the same as the interest on the price of slaves (adding thereto, of course, the cost of maintaining them). The freedman has just the same ownership in his own labor as his former master had; and though it may not occur to him to estimate the value of the property he has acquired, and though his powers are no longer quoted at their capitalized value, this is simply because they are not sold in that form, but are rented out by him from day to day. The employer's purpose in buying or hiring them is, however, the same,—so to employ his means as to obtain the greatest returns for his outlay.

In unproductive expenditures there is the same rivalry between labor and capital as in productive industry. Consumers may prefer grand houses, sumptuous furniture, and

*It may be objected that, as capital is used to pay labor, therefore the substitution of auxiliary capital for labor in any employment, or *vice versa*, cannot affect the amount of capital used in that employment nor the rates of interest or of wages. But this objection would overlook the fact that the amount of capital necessary to supplant a given amount of labor is far greater than the amount needed to pay the wages of that labor. Indeed, it is the capitalized sum of which wages would equal the annual interest.

splendid equipages, or rich viands and costly wines, or the services of teachers or of musicians and actors, of soldiers, retainers, or menials; and, as the captain of industry aims to get the greatest product for the least cost, so the consumer aims to get the most gratifications for the least outlay, and is to no small degree guided in his selection by the comparative costs of the various forms of expenditure which offer themselves to him.

From what has been said, it appears that the demand for labor can only be equal to the supply when the price is such that the employer can gain no pecuniary advantage by substituting either labor or auxiliary capital the one for the other in any of their various uses. Whenever this condition of things exists, price is in equilibrium; for otherwise demand would either exceed or fall short of supply. At any higher price of labor, employers would hasten to substitute for it the use of tools or other forms of auxiliary capital in those operations where there had already been but little advantage in using labor; and demand for labor would therefore slacken and fall short of supply. At a lower price, employers would withdraw auxiliary capital from some of the operations where its advantages had been already small, and would buy labor instead; and demand would outrun supply. Thus the very aberrations of price from its normal rate set forces at work which in the end restore its equilibrium.

It is true that changes in other circumstances, that misinterpretations of the industrial position, or untoward struggles to raise or to lower price, do continually disturb the market. But it is not necessary that the equilibrium be ever exactly realized, or that it should prevail undisturbed. Water seeks its own level, but yet the sea is never quite smooth; and so, whatever fluctuations sweep over the wages market, price forever gravitates toward that figure at which no portion of capital devoted to the purchase of labor can be more profitably converted into

auxiliary capital, and no portion of auxiliary capital can be more profitably diverted to the purchase of labor, and it never in a state of perfect competition remains long remote from this level. This is, after all, but an application of Adam Smith's old maxim, that the profits of capital must be equal in each of its employments.

That the substitution of labor and auxiliary capital for each other may be induced by changes in the rates of interest and of wages is a truth which has commonly been overlooked by economists. Thornton, in the vehemence of his refutation of the wages-fund theory, went so far as to assert, and in this he obtained the adhesion of Mr. Mill, that in the case of labor "demand does not increase with cheapness" (p. 87, Thornton *On Labor*, 2d edition). Because labor is indispensable, it seemed to these distinguished economists that no part of it could be curtailed, and that no increased amount would be used, owing to change of price. Mill even proclaimed that expenditure in wages is limited only by the aggregate means of the employing class (deduction being only made of the amount required to maintain themselves and their families), which implies a state of industry in which tools are discarded, and where the completion of the product follows so rapidly as to dispense even with the necessity of carrying a stock of partly finished materials. (*Dissertations and Discussions*, iv. p. 44.)

Labor certainly is indispensable. Auxiliary capital cannot work unattended by labor; and we may add that in modern civilized industry labor seldom works unsupplemented by auxiliary capital. Many necessary things can only be done by labor, and many others can only be done by the use of natural agents or of auxiliary capital. Others still can be done equally well by the use of either of them. Of the vast number of processes which are carried on by machinery, the greater number perhaps could be executed as well by hand labor. Machinery is preferred simply be-

cause the cost of production is lessened by its use. Also, in many processes now executed by hand, machinery would be equally efficient; but it is not used, because it would involve a greater cost of production. In these cases, opportunities for labor or for auxiliary capital to supplant the one the other only occur when either the price of labor or the cost of using machinery changes. In some cases, a great change only will afford such opportunities: in other cases, a small change will suffice. But there are other cases in which the cost is equal, or very nearly equal, whether labor is employed or auxiliary capital. In such cases, the slightest change in the price of labor immediately affects the demand for it.*

The condition, therefore, upon which demand will equal supply is as follows: *The price of a given amount of labor is equal to the price which is paid for the use of such amount of auxiliary capital as can replace it in those operations where the two things may be indifferently employed with equal pecuniary advantage.* This we may call the law of wages.

To illustrate the working of this law, we may arrange all operations in a scale showing the relative cheapness of using labor and of using auxiliary capital in each case. The gradations in this scale will be as many as the minute degrees in which the relative cost of these two methods differs in the infinite variety of possible operations. Where the cost is just equal, labor and capital will be used indifferently. On either side of this point, that one of the two will be employed which is relatively the cheapest. Where it is cheaper to hire labor, labor will be used. Where it is cheaper to hire the use of auxiliary capital, auxiliary capital will be employed. In some operations there will be an advantage in the use of auxiliary capital which cannot be overcome; in some there will be a similar advantage in the

* Men substitute mechanical for muscular forces because they are cheaper. In the great majority of cases, the development of machinery is the escape from the dearness of labor. (J. E. T. Rogers's *Political Economy*, p. 128, 2d edition.)

use of labor. These advantages on both sides will gradually shade away until they disappear or merge in those operations where the same results can be had with equal profit to the employer, whether labor is used or some form of auxiliary capital.

And, if we suppose the gradations in the scale to be of infinitely minute amounts, it follows that at every price of labor there will be some occupations where the costs of using labor and of using capital are identical. And (always disregarding the effect of economic friction and of the dislike of change) it follows that, at whatever point this equality of costs exists, labor and auxiliary capital will there be employed indifferently; while on one side of it labor alone will be used and on the other side capital exclusively, but always at the same prices as where the cost is the same of using either.

Among all the occupations in which it would be possible to employ either labor or capital to produce the same result, a given amount of labor will at this point where the costs are equal supplant less capital than in any other occupation where labor is actually used instead of capital; and, similarly, a given amount of capital will at this point supplant less labor than anywhere else where capital is actually employed instead of labor. It is therefore a peculiarity of those occupations in which labor and capital can be used indifferently that in them a given amount of either, whether it be of labor or whether it be of capital, will supplant a less amount of the other than anywhere else, where it is actually and constantly employed.

In all other employments where capital is used, it has some decided economical advantage over labor; and, similarly, wherever else labor is used, it has some decided advantage over capital. Only in this common field do their relative advantages merge, which comes to saying that each is here at its least or final utility relatively to the other. And, as the price paid for the use of labor and

capital in each of their other employments is the same as it is here, we arrive at the conclusion that, just as the final utility of every commodity fixes its absolute price, so the relative final utility of labor and of capital fixes the relative prices paid for the use of them.

III.

To accurately compare the costs of employing labor and auxiliary capital requires that we include not only the prices paid directly for the use of each, but also all outlays of every kind incident to that use.

The hire, or price, of labor covers its whole cost, or all but a trifling part of it. The principal element of the cost of using capital is interest: interest alone is really paid as compensation for its use. But interest is by no means the only element of cost. In order to keep it intact and provide against sudden loss or gradual depreciation, there must be provided, in addition to interest, a fund for insurance and renewals, or wear and tear. These things vary greatly with the nature of the particular business; while interest, strictly speaking, does not so vary. And, besides insurance against loss by sudden destruction or by the dilapidation of gradual wear and tear, there must be an insurance provided against the possible depreciation in value arising out of the instability of business and its changing conditions. For, as capital assumes fixed and durable forms, it loses the valuable quality of convertibility, and can no longer be withdrawn from a declining business, but is liable to be robbed of its value by changes in trade or fashion, or by the exhaustion of natural resources which it was used to exploit, or by improvements in the methods of industry. All these risks and disadvantages demand for many of the permanent investments of capital an extra rate of what we may call business insurance, varying with the degree of the uncertainty and

dread of change. Labor is therefore often employed at a price far exceeding the ordinary interest on the amount of capital which could replace it. The owner of a silver mine for these reasons may sometimes wisely hesitate to erect labor-saving appliances, even at an annual saving of from thirty to fifty per cent. on their cost; while a prudent manufacturer will often pass by opportunities to save ten per cent., or even twenty per cent., on the cost of improvements which it is in his power to make. Thus the adoption of known improvements by existing establishments is often delayed by the expectation of still further inventions and discoveries. But in new enterprises undertakers strive to adopt every known or possible improvement; and each improvement that is made suggests the possibility of further ones. The rapid growth and the frequent installation of new plants are among the principal causes of the great superiority in many branches of American manufacturing practice as compared with European,—a superiority which goes far to overcome whatever advantages foreign manufacturers may possess in cheaper labor and in longer experience.

But the charges for insurance and for renewals, or wear and tear, are not strictly charges for the use of capital, but simply a provision to preserve its amount unimpaired. Excluding these charges from the cost of using capital, its interest remains as the compensation for its use and is equal in all its employments at the same time and place. The rate of interest varies only with changes in the degree of productiveness or in the relative distribution of the product between labor and capital.

Disregarding, therefore, all items of the cost of employing auxiliary capital except interest, the law of wages assumes this form: *The interest on capital and the price of labor, in all employments, are fixed by the rates paid for their use in those of their actual employments in which they are*

used indifferently and where, therefore, a given amount of either one of them is capable of supplanting the least amount of the other; and the same price is in all cases paid for the use of those amounts of each which can in such employments be substituted the one for the other.

Since the time of Ricardo, it has often been said that a rise of profits or of interest is only possible through a fall of wages. But the very first inference from the foregoing law is that high and low interest accompany high and low wages, and that the rates of interest and of wages rise and fall together. Observation confirms this inference. Whether we merely regard the temporary changes in business, or whether we consider the more or less permanent condition of things in different countries at the same time, or in the same country at different times, it is evident that the more general, at least, among the temporary fluctuations of wages and of interest commonly coincide, and that not infrequently the more permanent differences in the rate of interest are conjoined with like differences in the rate of wages.* So evident is it that interest and wages rise and fall together in the ordinary fluctuations of trade, and that almost *pari passu*, that, in order to secure the immediateness of this result and avoid conflict or friction in readjusting their rates, the price of labor is frequently regulated by a sliding scale, so that it shall respond automatically to changes in the state of business and of the price of the finished commodities which it helps produce.

It is evident that changes or differences in the produc-

* The following is from an article on the early career of W. E. Forster: "It is easy to see by the condition of things described . . . clear indications that the mischief lay elsewhere than in the inadequacy of the wage fund. . . . Not only the seventeen hundred thousand of unemployed people, but also millions of idle capital, were, as we have seen, going a-begging for employment. Bankers and brokers were reported as refusing to take fresh money, and charging one or one and a half per cent. for loans on the Stock Exchange, and two and a quarter and two and a half for the discount of bills. Capitalists dared not embark their capital in any fresh ventures." *Contemporary Review*, September, 1886, p. 317.

tiveness of industry cannot affect the rate of interchange of labor and auxiliary capital. And this is but saying that the changes in wages and interest which arise from this cause apply equally to both. But not every change in wages and interest is due to change in the productiveness of industry. Some changes arise from causes which alter the rate of interchange or relative utility of auxiliary capital and of labor, and affect wages and interest divergently. When this is the case, a shifting of the balance between labor and auxiliary capital ensues. In some employments where that one whose price is relatively depressed was already at the least disadvantage, it grows in demand under the influence of cheapness, and supplants to a greater or lesser degree the one whose price is relatively augmented, so that a readjustment of equilibrium is gradually attained upon a new level.

To complete the theory of wages, it is necessary to inquire into the nature and the effects both of those causes which affect wages and interest concurrently and of those which affect them divergently. But before proceeding to this task it is incumbent upon us to consider more carefully the exact significance of the law of wages, so far as we have already determined it.

At the beginning of this paper, we recognized that the price of labor is not the same thing as the remuneration of labor. It is not therefore to be expected that we should be able to indicate at the present stage of the inquiry what the remuneration of labor — which is the real ultimate object of inquiry — actually is. But we might at least have hoped that the law of the price of labor which we have been at so much pains to establish would tell what the amount of that price is, measured in money. Unfortunately, the law of wages as above laid down not only fails to tell the amount of commodities obtained by the laborer, but it does not even tell what amount of money is actually

paid for labor. It indicates, and indicates only, the condition upon which the price is in equilibrium. But, as this condition requires that the wages paid for a certain amount of labor should be equal to the interest paid for the use of a certain amount of capital, it might seem to be a simple step to conclude from this the definite amount of money paid for wages. There are, however, two reasons why this does not follow. In the first place, our investigation does not show what amounts of labor and of capital are equally compensated; and even this knowledge would be useless unless we also knew the rate of interest on capital, and this we can never ascertain until we also ascertain the rate of wages. The rates of interest and of wages are mutually dependent, and neither can be definitely ascertained without at the same time ascertaining the other. Their laws are in reality but the two aspects of one and the same law,—that, namely, which we have heretofore laid down as the law of wages. A little observation will show that, while this law applies to wages, it applies conversely equally well to interest.

This may seem a negative and very empty result; but the knowledge which it gives as to the condition of equilibrium between interest and wages is of the utmost importance in itself, and also prepares us to enter with good hopes of success upon the further inquiry into the causes which engage equilibrium to settle at the exact point where it does rather than somewhere else.

IV.

The theory set forth in the preceding pages involves the assumption that in large numbers of operations the advantages of using labor and those of using auxiliary capital are not so widely separated as to preclude an active competition between those different methods of obtaining the same results. In some cases, both methods are actually and indifferently used under similar circumstances, and

their relative cheapness remains in suspense.* Such cases are of course limited in number and in extent. In the great majority of cases, there must be a difference between the cost of using labor and that of using auxiliary capital sufficient to be clearly recognized. And, however small this difference may be, it will under the same conditions always exclude the use of the less favorable method. But the conditions may vary; and the relative advantages of the two methods may, therefore, often be reversed.

Nothing, for instance, can be better established than the advantage of expensive machinery and plant in the textile industries, in transportation, and in the manufacture of nails. Yet to this day homespun clothes and rag carpets are used alongside of the products of the mills of Bradford and of Philadelphia; the hand nailer still plies his laborious and ill-paid task at the forges of the Black Country in Staffordshire; and in our own land blacksmiths are still probably found who make their own nails. Wagons and stages compete with railroads even in this country; while in Mexico carriers with packs on their backs and donkey-drivers with herds of asses carry freight at less rates than railroads, or at least did so recently.†

Almost every new process passes through a long period of trial, in which its comparative merits remain in suspense. Only gradually it gains a general acceptance. The old methods linger a long time under circumstances where their application continues to present equal or superior advantages.

* A coal-cutting machine, or a machine for moulding cast-iron pipes, takes the place of a great deal of manual labor. Machines for both these purposes are in practical use to a limited extent; but it is not yet positively demonstrated whether they are cheaper or dearer than labor. A decrease in interest, or in the other costs of operating them, or an increase in the price of labor, or even an interruption in the supply of labor, might insure their general introduction. Some operators, it is said, retain them for the especial purpose of averting strikes.

† I was told in the City of Mexico that rosin for the use of the gas works was brought on asses' backs from the state of Morelos, some fifty miles distant, at less charge for carriage than by rail. This was in the spring of 1884.

Somewhere the advantages of the old process and of the new are about evenly balanced; and there a slight change in the cost of either would effect a great change in the relative extent to which each is employed.

About the dividing line where the advantages of machine methods and hand methods are evenly balanced, the price of labor's services will be found equal to the cost of the services of such auxiliary capital as would replace it. This line of equilibrium need not long remain stationary. It varies with every variation in the price of labor and rate of interest; it also varies with every improvement or change in the different methods. To-day it probably is other than it was yesterday or than it will be to-morrow. Machine methods steadily expand at the expense of hand methods. The cheapening of machine-made fabrics banishes from use antiquated homespuns and picturesque local costumes. A lowering of railway tariffs will some day stop the traffic of the Mexican donkey-driver. A rise of wages which should reach the poor nailers of Staffordshire would leave their forges cold and idle forever.

In many cases, the decision between the different methods depends upon the size of the market to be supplied; in others, it depends mainly upon the constancy with which tools can be used. While a machine stands idle, the interest on its cost keeps running; but labor can be discharged or turned to other work. A power crane represents a large class of expensive tools which accomplish the work of many men. It can only be used when its employment is tolerably constant, but it then effects a great saving. A steam plough may sometimes be profitable on a large farm, but never on a small one. A type-writing machine is only used where much copying is done. A calculating machine can only be profitably used where many similar calculations are carried on, as in the Massachusetts Bureau of Labor Statistics. (*Report to Columbus Convention, 1883, pp. 7 and 8.*)

A reaping machine dispenses with many laborers, with a binder attached it dispenses with many more ; but even in the United States the use of these machines is not universal. They compete to some extent even here with hand labor.

The agricultural processes of different countries are among the surest indices of the condition of the laboring population. In Germany, it is a common sight to see a cart drawn by a woman and a dog : where labor is dearer and money more plenty or the people a little easier, a horse releases both alike from their unnatural task. In the United States, where labor is dear, costly agricultural machinery is extensively used, in spite of the smallness of the farms : it is much used in England also, because there the farms are large ; and wages, although lower than in the United States, still far exceed those of other countries. In Russia, on the other hand, in Mexico, in Asiatic countries, and even in Southern Europe, we find the rudest tools : baskets are used instead of wheel-barrows, wooden ploughs instead of iron ploughs, or gangs of spade-men replace both the ploughs and the beasts which draw them. A part of this is no doubt due to sheer stupidity ; but much is also due to the price of labor and the rates of interest. The high cost of tools, and especially the difficulty of making repairs, in rude countries are additional drawbacks to the use of auxiliary capital.

In no country, perhaps, is common labor so cheap when compared with its efficiency as it is in Mexico ; and in few are the interest and the risk of employing capital so great. Machinery and tools are there of the rudest description. Scarcely anything is done by the use of fixed capital which it is possible to do by hand. Entirely different methods of silver mining and reduction are pursued to the north and to the south of the Rio Grande. It is sufficient explanation that sixty cents a day is higher wages beyond the frontier than three dollars on this side for equal work,

while the cost of machinery in Mexico is perhaps double. Asses are the one form of capital freely used by the Mexicans, but asses are there relatively as cheap as men.

The construction of water works affords an instance where the comparison of the cost of interest and the cost of labor is very direct. It is often a question whether to make use of a near source of supply, and pump by steam, or to go to a farther source, and utilize gravity. So far as cost is concerned, this question resolves itself into a comparison between the wages of engineers and firemen and the cost of coal (which is mostly wages) in the one case, and the interest on a longer pipe line, which may be necessary, in the other case.

In the foregoing examples, the competition between labor and capital is palpable and open. But this is not true of all the cases where auxiliary capital and labor displace each other; perhaps it is only true of the smaller part of them. Sometimes the choice between using auxiliary capital and labor assumes the form of a choice between articles produced mainly by the use of one or of the other, as is the case with the competition between natural gas and coal. The cost of mining coal, and especially that of mining soft coal, is little else than wages; while the cost of natural gas is almost entirely interest on the plant needed for its conveyance. The distance to which natural gas shall be carried is a question of the rate of interest and of the price of mining coal. Artificial gas, also, is more and more used as a substitute for coal; and its cost is largely interest on the expensive plant needed for its manufacture and distribution. Indeed, of all the many contrivances to save fuel, every one results in the outlay of additional capital and in economy in the amount of labor employed.

In the case of lighting, electricity appeals to almost exactly the same wants as gas; but the proportions of capital and of labor employed vary greatly between them. If a gas plant of given size is worth fifty thousand dollars,

and requires the labor of fifteen men in operating it and in mining coal, whereas an electric plant supplying the same number of lights is worth one hundred thousand dollars, and only needs the labor of ten men, who will deny that the relative cost of electric lighting and gas lighting depends on price of labor and on interest?

We have so far spoken only of cases where definite amounts of labor and of capital supplant each other, either directly or indirectly, in producing the same things; and we have been compelled for the sake of clearness to limit ourselves to simple and obvious cases. Industrial operations, however, commonly involve so many and such various factors that it is difficult or impossible to measure or contrast the amounts of labor and of auxiliary capital employed in each of the different combinations whereby the same things are produced; and yet it does not follow that the influence of their respective cost upon the selection made is less strong because it eludes observation. Furthermore, there are many cases of the displacement of labor or of auxiliary capital, the one by the other, where there is really no actual substitution, and where the change does not result in producing the same things. While the employer seeks every opportunity to substitute labor and capital for each other at a profit, he is just as earnest to discover and to stop every outlay which fails to yield to him the usual rate of profit. He scrutinizes every item of his expenditure. If any one item of labor is not repaid out of the product together with the usual business profit, he dispenses with it. If any auxiliary capital does not afford a full profit, he seeks some other use for it. He is equally alert in his search for new forms of profitable investment, both of the funds thus liberated and of any new accumulations. He will devote a part to buying labor and a part to employing auxiliary capital. How much shall go in each way, and whether in the old or in some new proportion, depends, in great part at least, upon the rates of wages and of interest.

One of the ways in which capital may be diverted from the payment of wages to auxiliary uses without directly supplanting any definite portion of labor is in the case of buildings. Where interest is high, there is too much use for money to sink it in costly buildings. We put up with cheap temporary structures. The reverse is the case where interest is low. In no country, perhaps, does the cost of employing capital both as to interest and as to risk bear so low a ratio to the price of labor as in England. Consequently, there is a lavish expenditure in fixed capital. An American arriving in England wonders at the massive docks on the Mersey; and he hears with amazement that the average cost of English railroads is two hundred thousand dollars per mile. But even in America the rate of interest has of late approximated to that which prevails abroad, while no similar reduction has occurred in the cost of labor. Therefore, rough sheds give place to costly depots of brick and stone; ten-story office buildings and apartment houses rise in our cities; and the steam ferries and wooden trestles which formerly carried our railroad trains are replaced by iron bridges costing hundreds of thousands of dollars.

But it is not only by the use of fixed instruments that capital is withdrawn from the purchase of labor. This is just as effectively done when large stocks of materials and goods are kept on hand, whereby the movement of circulating capital is retarded, and its distribution in wages made less frequent. Merchants and speculators may keep on hand larger or smaller stocks of goods. Manufacturers and shippers may hasten or slacken the processes of manufacture and transportation. All will be guided by the expectation of gain; and this reduces itself to a comparison of the interest it will cost to carry their wares with the saving in other costs of production, or with their estimate of the prospective advance in the price.

Where the processes of productive industry can be

hastened by the use of additional labor, as in floating logs down the rivers of Maine and New Brunswick, the question is whether the cost of such labor will or will not equal the interest saved. Where by protracting the duration of a process its products gain in quality and value, as happens with leather and wine, the choice of processes depends upon the comparison of the enhancement of value with the additional interest. In different countries a different selection may be made.

When interest is low and wages high, the employment of superfluous or unnecessary labor is carefully avoided; but large stocks of goods are freely kept on hand, both for productive and for speculative purposes. Low rates for money notoriously foster speculation; but, when a flurry comes over the money market, operators hasten to realize. In Europe, low rates of interest lead to a more general adoption than is usual here of the slower and the more perfect processes. In Scotland, vast quantities of pig iron are carried "in store," as a speculative investment, with the expectation of making interest on capital out of the rises in price which occur from time to time. Our Southern States are the world's chief producers of cotton; but the bulk of the crop soon gravitates to England, where the world's stock is mostly carried because of the difference in the rate of interest, which in the interior of Texas is not less than ten or twelve per cent., and in England is not more than three or four.

Where interest is high and wages are low, as measured in money or exchange value, there we find a scarcity of implements and scanty stores of goods; but labor is there used with profusion alike in productive and in unproductive employments. More hands are employed to do the same useful tasks, supernumeraries and drones are more readily tolerated, and domestic servants are employed in greater numbers. In Russia or Mexico or India, countries where labor is exceedingly cheap, a gentleman

scarcely ever travels without being accompanied by one or more servants; but he will find the hotels devoid of the most necessary and simplest articles of furniture. The feudal nobles were often poor in money, and their households were wanting in many conveniences which every mechanic's home can now afford, but, on the other hand, they were surrounded by domestics and retainers of high and low degree, in numbers which would be ruinous to the wealthiest nobles or bankers of our time. It was only possible to bear the charge of all this throng of followers and menials because the cost of labor was small. Remuneration, the food, clothing, and shelter obtained, may for the habits of that time have been ample; but it was paid in commodities which the feudal proprietor could have used in no other way. The money value of his herds and of his lands and crops was next to nothing: they could not be exchanged for money or for goods, and could only be used in this way, to swell his pomp and uphold his dignity and power.

We have hitherto spoken chiefly of the choice between different methods of producing the same commodity or commodities which are virtually the same. This is guided solely by the preference for cheapness.

The choice between industries which produce different commodities is guided in much the same manner. The amount which men desire of any particular commodity varies as its price varies. But cheapness is not here the sole motive of choice, and variations in price do not influence the demand for every commodity in the same degree. The demand for bread is but little affected by price; but the demand for seats at the opera is affected very greatly.

Observe how greatly the proportions of labor and of auxiliary capital employed in different industries vary. In growing wheat or raising garden produce, apart from the value of land, the outlay consists almost entirely of labor;

but in pasturage, on the other hand, an utterly insignificant amount of labor under some conditions is sufficient to care for vast sums of capital, as is the case on Western ranches or on Australian sheep-runs. The lace-maker requires no capital but a cushion and some thread. The prospector in our Western mining regions requires no capital but a grub stake and a pick and spade and basin. Little more capital than this is needed by the fisherman and the hunter. In making roads or in building dams or embankments, very little capital sets in motion great amounts of labor. On the other hand, in operating a railroad, a vast amount of capital is operated by a few laborers. In a water works, the proportion of labor is still less. In a water works on the gravity system, a plant worth one hundred thousand dollars may sometimes be readily managed by a couple of men.

It is not necessary to inquire here what may be the extent and the limits of the influence which cheapness exerts upon the choice between industries. It is sufficient to observe that, so far as this influence extends, low interest and a high price of labor encourage industries which employ large capitals and small amounts of labor, and men indulge freely in those gratifications which such industries provide; but that high interest and low-priced labor stimulate industries which employ much labor and little capital.

The choice between industries producing different commodities by different proportions of labor and capital, so far as it is guided by cost, is therefore decided in the same way as the choice between different methods of producing the same commodity; namely, by the relative cost of labor and of interest. Were it impossible that labor and auxiliary capital should supplant each other in the production of a single commodity, the demand for labor and for the use of auxiliary capital would still depend upon their relative cost or price; for it would depend absolutely and

directly upon the demand for the different commodities into which each respectively enters the most largely, and this demand, always supposing desire to be governed by cheapness alone, would depend in turn upon the price of labor and of interest. The relative demand for labor and for auxiliary capital would still depend upon the price of their use; but the process would be a little less direct than where the choice lies between different methods of the same industry.

The law of the price of labor would then assume this form: *Equilibrium can only exist in the price of labor and in the price of using capital when it is impossible to augment the sum of gratifications by supplanting industries employing a large proportion of one by industries employing a large proportion of the other.*

Among the industries between which desire is evenly balanced, there are some in which labor predominates, and some in which capital predominates. The price of labor which will produce any gratification in the former industries equals the cost of using capital to produce in the latter other gratifications equally esteemed by human desire. And the same prices will be paid for the use of labor and for the use of capital in all their employments as are paid for them here.

If the price of labor be excessively high, the price of those commodities into which labor most largely enters will also be high, and the demand for them will slacken. Employers will withdraw capital from their production in order to embark it in industries using a greater proportion of auxiliary capital. The demand for labor and its price will fall, and the use of auxiliary capital will grow at its expense until equilibrium is restored. Thus every departure of wages from their normal rate works its own cure.

But, in so far as desire rejects the guidance of cheapness and is led by the various human appetites, it may, according to the nature of those appetites, direct industry into

channels requiring much labor or into others requiring much capital. In the first case it stimulates and in the latter case it depresses the demand for labor. But the further consideration of this point lies without the scope of this paper.

V.

In this paper we have treated the wages question as a special case of the law of value and subject to the operation of supply and demand. We recognized at the outset that supply, being for moderate periods of time constant, the market price depends upon the demand, while the demand in its turn always depends upon price; and we set about finding the condition upon which equilibrium would establish itself in these things. In so doing, we were obliged to define wages; and, in the only sense in which wages influence demand, they mean the money price of the services of labor.

We have seen that capital and labor compete with each other for employment, being able often to supplant each other and to render the same or equally desirable services; and we have noticed how greatly the amounts vary of the capital and of the labor which can do this in different employments.

Where the smallest amount of capital will supplant the largest amount of labor, there the advantage of employing capital is greatest, and there capital will be exclusively employed: where the least amount of labor will supplant the largest amount of capital, there the advantage of labor is greatest, and there labor will be exclusively employed. The advantages of labor over capital and of capital over labor shade off from these points in an infinite number of successive and minute gradations until they finally merge at a point where labor and capital can be indifferently used with equal advantage and profit to the employer.

At this point, the same price must be paid for the services of labor as for the same or for equal services ren-

dered by capital. We accordingly reach this formula: *The same price, whether it be called wages or interest, is paid for that amount of labor and for that amount of capital which can supplant each other and render the same services in those industries where their relative superiorities merge, or which can in different industries render services equally esteemed by effective desire. And the same prices as are paid in these cases for labor and for the use of capital are also paid for them in all their other employments.*

It seems to follow from this that in a certain sense wages and interest are the same thing; that is to say, that they are paid indifferently by the employer for services which, although rendered by very diverse and competing agencies, are to him equivalent. This conclusion accords with the fact that high or low rates for interest and for wages often coincide, and that their fluctuations to a great extent happen and progress concurrently.

To complete the theory of wages, it remains to inquire at what point labor and capital do actually supplant each other, and what are the causes of wages and interest being really high or low. These causes are all comprised in the state of nature and of the arts, in the supplies of labor and of capital, and in the character of human appetites. Space forbids our entering further upon these topics here.

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